



Snippets of Science from Fermilab

LS1 Explore

WHAT CAN YOU “SEE” WITH YOUR EARS?

Challenge: Can you make observations and “see” your outdoor space, in a new way, using only your sense of hearing?

Goal: Using your sense of hearing, investigate your outdoor space and record your observations on a 360-degree sound map. You can learn things about your environment without having your eyes open. Scientists use different senses to make observations.

Fermilab Connection: Fermilab ecologists listen for sounds in the prairie, woodland and wetland areas in order to locate wildlife and take inventory. Animals are often hidden, and scientists are unable to “see” wildlife until it makes a noise. Fermilab physicists “listen” to vibrations from germanium crystals in experiments that study dark matter.

Preparation

Find a safe place to sit or stand, preferably in an outdoor space. Have a pencil and the 360-degree sound map log sheet ready to record the sounds you hear. You will position yourself where you can hear to the right, to the left, in front, behind, above, and near you.

Procedure

1. Set a timer for three minutes.
2. Stay very still with your eyes closed. What sounds do you hear? Can you identify them? Where is each sound located?
3. After you open your eyes, record the data of what you heard and from which location on your 360-degree sound map. You can draw pictures, use words, or even write the sounds you heard. Are they living or non-living sounds?
4. Below your sound map, write down any questions you have about the sounds you heard.

GRADE LEVEL

Grades 3–8 with modifications

MATERIALS

- 360-degree sound map
- Pencil

Discussion Questions:

1. What sounds surprised you?
2. How was it helpful to record exactly what you heard when you completed your sound map?
3. What if you did a sound map at a different time of day? Would there be a difference in what you record?
4. How did you feel about any living sounds when you closed your eyes? Did you connect to nature in a way that you have not done before?
5. What are other ways you can listen to sounds in your outdoor space?
6. Was it difficult to determine what was a living or a non-living sound? Do all living things make sounds?
7. How can you learn about the living things you heard and even observed once your eyes were open?

Have others record their observations and then compare your sound maps.